



# SPEC® CINT2006 Result

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GIGA-BYTE Technology Co. Ltd.

(Test Sponsor: Intel Corporation)

Gigabyte MA78GM-S2H Motherboard (AMD Phenom II X4 920)

SPECint®2006 = 16.7

SPECint\_base2006 = 15.8

CPU2006 license: 13

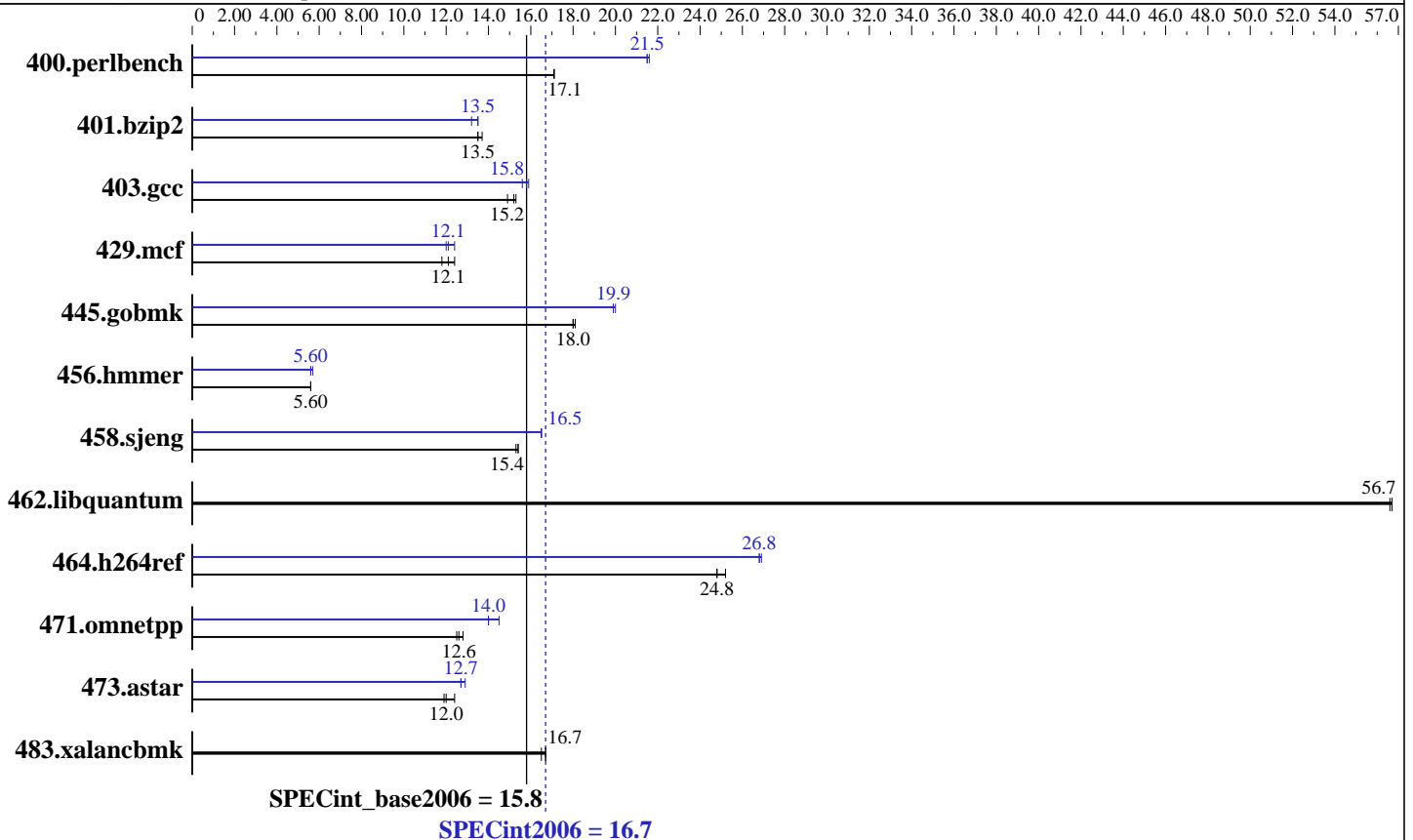
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: May-2009

Hardware Availability: Jan-2009

Software Availability: Nov-2008



## Hardware

CPU Name: AMD Phenom II X4 920  
 CPU Characteristics:  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 CPU(s) orderable: 1 chip  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 512 KB I+D on chip per core  
 L3 Cache: 6 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 4 GB (4x1GB DDR2-800 CL5)  
 Disk Subsystem: Seagate 320 GB SATA, 7200RPM  
 Other Hardware: None

## Software

Operating System: Windows Vista Ultimate w/ SP1 (64-bit)  
 Compiler: Intel C++ Compiler Professional 11.0 for IA32  
 Build 20080930 Package ID: w\_cproc\_p\_11.0.054  
 Microsoft Visual Studio 2008 (for libraries)  
 Auto Parallel: Yes  
 File System: NTFS  
 System State: Default  
 Base Pointers: 32-bit  
 Peak Pointers: 32-bit  
 Other Software: SmartHeap Library Version 8.1 from <http://www.microquill.com/>



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## Results Table

| Benchmark      | Base       |             |         |       |             |             | Peak       |             |            |             |             |             |
|----------------|------------|-------------|---------|-------|-------------|-------------|------------|-------------|------------|-------------|-------------|-------------|
|                | Seconds    | Ratio       | Seconds | Ratio | Seconds     | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds     | Ratio       |
| 400.perlbench  | 572        | 17.1        | 571     | 17.1  | <u>571</u>  | <u>17.1</u> | 455        | 21.5        | 453        | 21.6        | <u>454</u>  | <u>21.5</u> |
| 401.bzip2      | <u>715</u> | <u>13.5</u> | 716     | 13.5  | 705         | 13.7        | 717        | 13.5        | 732        | 13.2        | <u>717</u>  | <u>13.5</u> |
| 403.gcc        | <u>529</u> | <u>15.2</u> | 542     | 14.9  | 527         | 15.3        | 506        | 15.9        | <u>510</u> | <u>15.8</u> | 517         | 15.6        |
| 429.mcf        | <u>755</u> | <u>12.1</u> | 771     | 11.8  | 734         | 12.4        | <u>754</u> | <u>12.1</u> | 738        | 12.4        | 758         | 12.0        |
| 445.gobmk      | <u>582</u> | <u>18.0</u> | 581     | 18.1  | 583         | 18.0        | 527        | 19.9        | 526        | 20.0        | <u>526</u>  | <u>19.9</u> |
| 456.hammer     | 1654       | 5.60        | 1672    | 5.60  | <u>1657</u> | <u>5.60</u> | 1651       | 5.70        | 1664       | 5.60        | <u>1663</u> | <u>5.60</u> |
| 458.sjeng      | <u>787</u> | <u>15.4</u> | 789     | 15.3  | 786         | 15.4        | 731        | 16.5        | 733        | 16.5        | <u>731</u>  | <u>16.5</u> |
| 462.libquantum | 366        | 56.7        | 366     | 56.6  | <u>366</u>  | <u>56.7</u> | 366        | 56.7        | 366        | 56.6        | <u>366</u>  | <u>56.7</u> |
| 464.h264ref    | <u>891</u> | <u>24.8</u> | 892     | 24.8  | 880         | 25.2        | <u>825</u> | <u>26.8</u> | 823        | 26.9        | 826         | 26.8        |
| 471.omnetpp    | 489        | 12.8        | 498     | 12.5  | <u>495</u>  | <u>12.6</u> | <u>445</u> | <u>14.0</u> | 432        | 14.5        | 447         | 14.0        |
| 473.astar      | 591        | 11.9        | 568     | 12.4  | <u>585</u>  | <u>12.0</u> | 553        | 12.7        | 546        | 12.9        | <u>551</u>  | <u>12.7</u> |
| 483.xalancbmk  | 417        | 16.5        | 414     | 16.7  | <u>414</u>  | <u>16.7</u> | 417        | 16.5        | 414        | 16.7        | <u>414</u>  | <u>16.7</u> |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## General Notes

Tested systems can be used with Shin-G ATX case, Antec NeoPower 480W power supply  
Binaries were built on Windows Vista Ultimate (32-bit)  
OMP\_NUM\_THREADS set to number of logical processors as seen by the OS  
KMP\_AFFINITY set to physical,0

## Base Compiler Invocation

C benchmarks:  
icl -Qvc9 -Qc99

C++ benchmarks:  
icl -Qvc9

## Base Portability Flags

403.gcc: -DSPEC\_CPU\_WIN32  
464.h264ref: -DSPEC\_CPU\_NO\_INTTYPES -DWIN32  
483.xalancbmk: -Qoption,cpp,--no\_wchar\_t\_keyword



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## Base Optimization Flags

C benchmarks:

```
/arch:SSE2 -Qipo -O3 -Qprec-div- -Qopt-prefetch -Qparallel
-Qpar-runtime-control -Qvec-guard-write /F512000000
```

C++ benchmarks:

```
/arch:SSE2 -Qipo -O3 -Qprec-div- -Qopt-prefetch -Qcxx-features
/F512000000 shlw32m.lib -link /FORCE:MULTIPLE
```

## Base Other Flags

C benchmarks:

```
403.gcc: -Dalloca=_alloca
```

## Peak Compiler Invocation

C benchmarks:

```
icl -Qvc9 -Qc99
```

C++ benchmarks:

```
icl -Qvc9
```

## Peak Portability Flags

```
403.gcc: -DSPEC_CPU_WIN32
464.h264ref: -DSPEC_CPU_NO_INTTYPES -DWIN32
483.xalancbmk: -Qoption,cpp,--no_wchar_t_keyword
```

## Peak Optimization Flags

C benchmarks:

```
400.perlbench: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
-Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
/F512000000 shlw32m.lib -link /FORCE:MULTIPLE
```

```
401.bzip2: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
-Qipo -O3 -Qprec-div- -Qopt-prefetch -Qansi-alias
/F512000000
```

```
403.gcc: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
-Qipo -O3 -Qprec-div- /F512000000
```

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## Peak Optimization Flags (Continued)

429.mcf: /arch:SSE2 -Qipo -O3 -Qprec-div- -Qopt-prefetch /F512000000

445.gobmk: /arch:SSE2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2) -Qipo -O2 -Qprec-div- -Qansi-alias /F512000000

456.hmmer: /arch:SSE2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2) -Qipo -O3 -Qprec-div- -Qunroll2 -Qansi-alias /F512000000

458.sjeng: /arch:SSE2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2) -Qipo -O3 -Qprec-div- -Qunroll4 /F512000000

462.libquantum: basepeak = yes

464.h264ref: Same as 456.hmmer

C++ benchmarks:

471.omnetpp: /arch:SSE2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2) -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-ra-region-strategy=block /F512000000 shlw32m.lib -link /FORCE:MULTIPLE

473.astar: /arch:SSE2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2) -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-ra-region-strategy=routine /F512000000 shlw32m.lib -link /FORCE:MULTIPLE

483.xalancbmk: basepeak = yes

## Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-win32-revA.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-win32-revA.xml>



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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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